The Citrus Industry

Vol. 24 — No. 2 FEBRUARY, 1943 15 Cents A Copy

Florida Citrus Growers To Provide Uncle Sam With Bombers . . . .

Florida citrus growers have done their full part, and more, in every phase of the nation's war effort. They have richly earned the Blue Ribbon for the promptitude and effectiveness with which they have met every request of the government for co-operation.

In the drive for scrap rubber, no class of citizens responded with greater promptitude or enthusiasm than those same growers. To a Polk county citrus grower went the credit for contributing the greatest amount of scrap rubber of any individual in the state. Other citrus growers of Florida ran him a close second, and the industry as a whole made a remarkable and surprising record in that campaign.

Again, in the matter of scrap metal, it was a citrus grower who led the state in individual contributions. Growers of citrus dug deep into barns, sheds and fence corners for old and rusting articles of farm machinery to swell the scrap pile of the nation. Many a disused farm implement dug up by Florida citrus growers is now doing its part in helping to defeat the Axis.

The ban on the purchase of new implements, the rationing of tires, gas and oil has been accepted by Florida citrus growers without grumbling as their part in the war effort. Without question, they have accepted price ceilings and curtailment of labor as one of the essential costs of victory. Nowhere has there been greater or more spontaneous co-operation in the victory program than among Florida citrus growers.

And now, voluntarily and without outside suggestion, Florida citrus growers have gone a step further and of their own volition have entered upon a campaign to provide Uncle Sam with a fleet of bombing and fighting planes to strafe the enemies of the American way of life.

Calling off the mid-winter meeting of the Florida Orange Festival, the officials of that organization, headed by John A. Snively, Jr., have instituted a bond-selling drive to provide a fund for the purchase of these much needed implements of war. It is the hope of the leaders in this campaign that they may raise at least $300,000 in each of the major citrus producing counties of the state and smaller amounts in those counties producing smaller amounts of citrus fruits. Every dollar so raised will be applied to the purchase of bombers and fighters for the use of our flying forces.

The campaign is already well under way. Growers are contributing by investing percentages of their receipts from the sale of their crops in war bonds, employees of canning and packing plants are contributing through the purchase of war bonds and stamps. Others connected with the industry are making liberal contributions to the fund. The campaign has the backing of the Florida Citrus Commission and the U. S. Treasury Department, while substantial assistance is being given by J. F. Bazemore, of Orlando, who has been named as Associate Administrator in charge of the Agricultural Division of the Florida War Savings Committee.

This is a most laudable movement and one in which every patriotic citizen may take justifiable pride. Like every other war effort in which the citrus growers of Florida have been concerned, it may be taken for granted that this campaign will be a success.

"FOOD WILL WIN THE WAR AND WRITE THE PEACE"

CLAUDE R. WICKARD, Secretary of Agriculture

Let IDEAL FERTILIZERS Help You Meet this Challenge!

If you ever had any doubt about your importance to the war effort . . . if you ever questioned the extent of your responsibility to your nation, the present food shortage should make it clear to you what a vital role each grower plays.

Never before has America so needed foodstuffs, especially the vitamin-rich, mineral-rich citrus and truck crops of Florida. And in this emergency America is depending on YOU to meet the issue.

Your nation *must have* the full benefit of your skill, knowledge and experience plus your determined effort to raise larger crops of better quality. In such a situation you will naturally turn to IDEAL Fertilizers to help increase production and quality. IDEAL Brands have proved their worth over nearly half a century. They bring you the best in materials, scientifically formulated and balanced to help you achieve maximum crop yield. Use these fine fertilizers now because only the best will serve in this time of urgent need.

Our staff of trained and capable field men is at your service. Ask them to assist you in attaining the greatest possible economy and highest productivity through proper fertilizing, spraying and cultivating programs.

Combine your IDEAL Fertilizer program with IDEAL and FASCO insecticides and sprays.

WILSON & TOOMER FERTILIZER CO. JACKSONVILLE, FLA.

IDEAL FERTILIZERS

WILSON & TOOMER FERTILIZER COMPANY
JACKSONVILLE - FLORIDA

INVEST IN VICTORY
BUY WAR BONDS!

Practical Considerations Related To pH Control in Sandy Soils

. . . Planted To Citrus

BY V. C. JAMISON, SOIL CHEMIST, CITRUS EXPERIMENT STATION, LAKE ALFRED, AT MEETING OF HORTICULTURAL SOCIETY

Because of the importance of pH control in soils there is an increasing demand for some simple method of estimating the rate of application of dolomite or other basic materials. Some tables are in use which show the amount to apply depending upon the pH and the nature of the soil. If the soil in question is highly resistant to pH change, that is, highly buffered, and used in growing some field or garden crops, such a table may be satisfactory.

Several factors related to the growth of citrus on light sandy soils make the use of such a table impractical. Dolomite applied to field soils is never as effective as its theoretical neutralizing power would indicate. This is due to its naturally slow action and to its incomplete contact with the soil acids. Something could be done about correcting for this if other factors could be depended upon to always have the same effect. Extremely variable quantities of bases are leached from the soil depending upon the amount and distribution of rainfall as well as the texture and general nature of the soil. Bases may be leached from the soil more rapidly than released from the dolomite or again the soil may remain so dry for some time that the dolomite fails to react. Spray materials and the adsorption of bases by the tree, as pointed out by Volk and Peech (2), have a considerable and variable effect on soil pH beneath the tree spread. Wettable sulfur has a much greater acidfying effect beneath the tree than lime-sulfur. This should be remedied by an increased application of dolomite spread by hand beneath the tree. The soil tends to be more acid beneath the tree than in the middles even where sulfur sprays are not used. This is not taken into account when a machine spreader is used in the application of the dolomite. The coarser and less active lumps are thrown beneath the tree while the finer active particles fall in the middles behind the machine. The nature and amount of fertilizer used is also important. Somewhat more dolomite would be needed to correct the condition resulting from a heavy application of an "acid" fertilizer than if a basic mixture were used.

In the case of the garden soils mentioned, great care needn't be taken to avoid the excessive use of basic materials. The soils are usually high in exchange capacity and hence are not easily raised to a very high pH. On the other hand, with the light sandy soils it is all too easy to realize a pH (6.0 or above) where copper, zinc and manganese deficiencies tend to develop. In spite of the widespread notion that dolomite can be used in limitless quantities without exceeding neutrality, there is little doubt that with its excessive application conditions are such that some of the nutrients are tied up in "unavailable" forms, especially in local zones near the unreacted material.

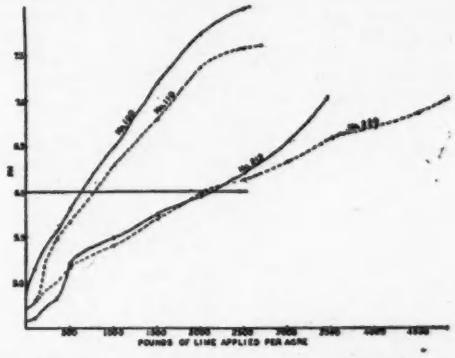

Figure 1 Laboratory titration curves for four light sands showing the theoretical relationships between pH and rate of application of lime

It is often thought that soils of the same type are quite similar in their relationship between pH and base content. That is, with similar soils one should be able to predict the amount of dolomite or lime needed from the soil exchange capacity and the pH. In Table 1 are shown the "lime requirements" determined in the laboratory by titration for four samples of Norfolk very fine sands from different localities; that is, the effect of increasing amounts of lime upon the pH of the same amount of soil as determined in the laboratory. It is interesting to note that less lime is required to change the soil with the highest exchange capacity from pH 5.2 to pH 6.0 than the soil with an exchange capacity of only 3.48. A similar reversal is shown for the other two soils. This seems to contradict the general principle that the higher the exchange capacity the greater will be the "lime requirement" at a given pH value. Consideration of the titration curves from which the data in Table 1 were derived will help clarify this point. In Figure 1, curves for soils No. 212 and 220 are similar below pH 6.0 but quite different above this value. The exchange capacity is based on pH 7.0. That is, it expresses, in chemical units, how much base is required to carry the soil from its most acid condition up to neutrality.

If the "lime requirement" were based on pH 7.0 there would be less chance of an apparent discrepancy between theory and practicable results.

This difficulty is not as serious as it appears, however. One does not try to determine to the closest pound how much dolomite to apply and though soils do vary somewhat, a rough general guide could be worked out whereby rates of application could be roughly estimated from an

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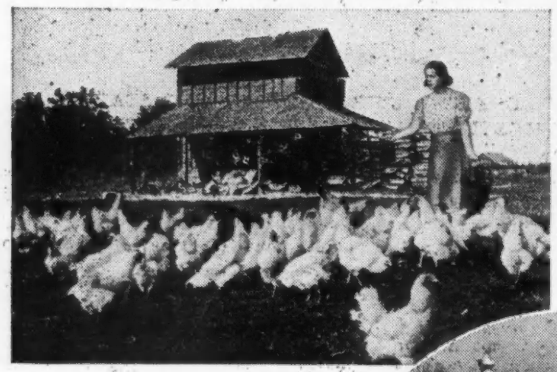
FOOD POWER makes MANPOWER count



BILLIONS OF EGGS, and thousands of tons of poultry are needed for American boys on all fronts. That's why the egg goal is up 8% and chicken goals 28%. Last year's record was superb. For the boys' sake, we've got to beat it in 1943!

Photo from U. S. Dept. of Agricuture by Forsythe

PLENTY OF PORK, is required for every gallant American fighter and for our allies. Pork, ham, and bacon are vital food power in the mess tins of our boys at the front. Hog goal is up 27%. Lard, up 36%. So fatten your pigs to help do the big job!

Photo from U. S. Dept. of Agriculture, by Forsythe

MORE MILK...Today's goal is actually 18 billion lbs. short of what we really need but we haven't cows enough to reach that huge total. You can see how every drop of milk counts. No other war material is more important!

Photo from Acme

FEED OUR FIGHTERS. Don't let the boys down; don't fail our Allies. On shipping schedules food has equal priority with guns, shells, bombs, planes and tanks. Every fighting boy needs 5 lbs. of food per day. That's how important food is at fronts around the world. Food for Freedom!

This is one of a series of reports from the United States Department of Agriculture published by the Chilean Nitrate Educational Bureau, Inc., in furtherance of the Nation's food production program. Publication of this report in this space does not constitute endorsement by the United States Department of Agriculture of any commercial product.

THE NITROGEN SITUATION

Goals for 1943, aimed for record output of crops and livestock vital to victory, forecast the heaviest fertilizer demand in our history. The new goals are the most crucial and important challenge our farmers ever have had to meet. Likewise the new goals confront the fertilizer industry with its hugest task. Nitrogen is more affected by the war than any other plant food. Restrictions in its use can be expected on unessential crops and on those of which we have large surplus. Apparently there will not be enough nitrogen to take care of everybody's complete requirements for war needs must and will get first call. Substitution of grades should provide a normal tonnage of mixed fertilizer though somewhat lower in nitrogen than usual. Due to this nitrogen saving, tonnage of nitrogen materials for direct use should be about the same as last year. This includes nitrate for such uses as top dressing grain in southeastern areas where absolutely essential.

The nitrogen supply must be used to get the highest possible return in essential food, oil, and fiber crops.

Food for Freedom!

The Citrus Industry
EXCLUSIVE SPECIALIZED CITRUS PUBLICATION
Issued Monthly
Representative of every interest
Representing no special interest

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Degreening Of Oranges As Affected By Oil Sprays

By JOHN R. WINSTON, Senior Horticulturist, Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, USDA., at Horticultural Society Meeting

Rindcolor of oranges, an important factor in their sales value, is greatly influenced by grove practices. Since some of these grove practices are followed by undesirable effects, it is important to know how best to cope with them. For example, oil sprays control certain insect pests, but delay degreening. It is known to growers that oil sprays may delay degreening on the tree, and to shippers that such sprays may also delay degreening in the coloring room. Under Florida conditions there appears to be no satisfactory substitute for oil sprays; therefore, it is necessary to know when they can be applied in order to obtain most satisfactory results.

Tests were initiated in 1931 and repeated in 1932 using Parson Brown oranges taken from the several experimental plots of the U. S. Bureau of Entomology at Orlando, the object being to determine with some degree of accuracy the effect of oils of different physical properties of rind color. The plan of these experimental plots, the spray schedule, types of oils compared, and the effect of the sprays on tree growth were reported by W. W. Yothers to this society in 1932, and therefore need not be detailed here. Briefly, the treatments consisted of one and two applications of two grades of oil (cheap lubricating and expensive white.)

The white oil was of a rather highly defined grade much as is commonly used for pan greasing in bakeries. It had a viscosity value of about 95 sec. Saybolt and was low in both sufonatable material and volatility. The lubricating oil, primarily prepared for lubrication of slow moving machinery, was and still is commonly used as a tree spray. Its viscosity value was about 80 sec. Saybolt and it was considerably higher than the white oil in both sulfonatable material and volatility.

When the fruit samples were gathered they were well above legal maturity requirements, yet all of them, including the unsprayed check lots, were far too green in color to be marketed advantageously without gassing. The test lots were held in the ethylene room for three days at 83° F. with 85 to 88 per cent humidity. They were then transferred to a storage room and held for thirty days at 70° and inspected periodically.

Figure 1 shows the effect of these sprays on the color of the fruit at time of harvest as well as at the end of the gassing period.

It will be noted that the white oil retarded color development to a greater extent than did the lubricating oil; the 2 per cent concentration, more than the 1 per cent; and two applications (mid-May and mid-October), more than one (mid-May). Although at time of picking the color of the fruit on some of the oil-sprayed plots was as good as or better than that on the check plots, the lots which received no oil at all developed the deepest orange color during the ethylene treatment. There was no consistent evidence developed from the storage of fruit from the plots to indicate that these oil sprays affected the keeping quality of the friut. However, had the oil-sprayed fruit been held in the ethylene room long enough to develop a color comparable with that of the check lots, doubtless more decay would have developed in the fruit.

Two plots of interest were included in another five-plot spraying experiment on mid-season budded oranges in 1932. Both plots received the usual sulphur applications and in addition one of them was sprayed in early September with 1 per cent lubricating oil. The fruit attained legal maturity in late October and collections were made on November 5 and 26. But little if any difference in color was observed between the lots at time of picking — both were quite green. They were gassed for sixty hours and, as would be expected, the later harvested, more

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PRACTICAL CONSIDERATIONS RELATED TO pH CONTROL IN SANDY SOILS PLANTED CITRUS

(Continued from page 3)

approximate exchange capacity value and the pH. If it were not for the variables found in the field some of which are unpredictable, such a guide would have high value.

Peech (1) has reported on the progress of an experiment laid out on Station property in 1937. This experiment was designed to test the effect of lime, dolomite, and finely divided magnesium carbonate on field soils. Applications of 0, 200, 400, 800, 1600, 3200 and 6400 pounds of lime per acre were added to one series of single tree plots in a Pineapple orange block and to another series of plots in an Excelsior grapefruit block. Dolomite was added to the next alternate row in each of the blocks at the same rates. Magnesium carbonate was applied in third alternate rows at 0, 50, 100, 200, 400, 800 and 1600

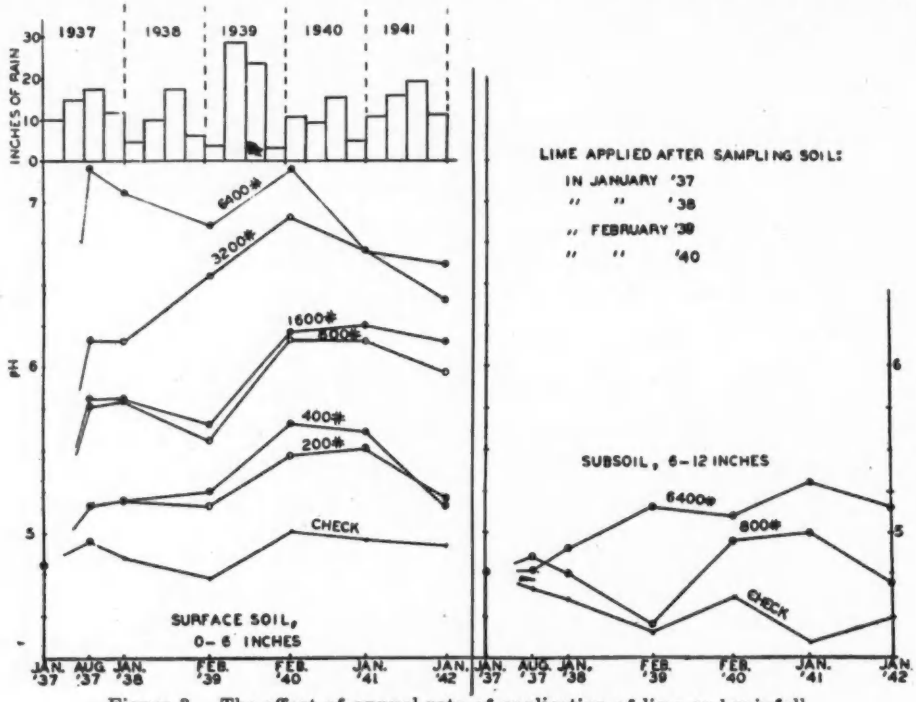


Figure 3. The effect of annual rate of application of lime and rainfall distribution upon the pH of a light sand

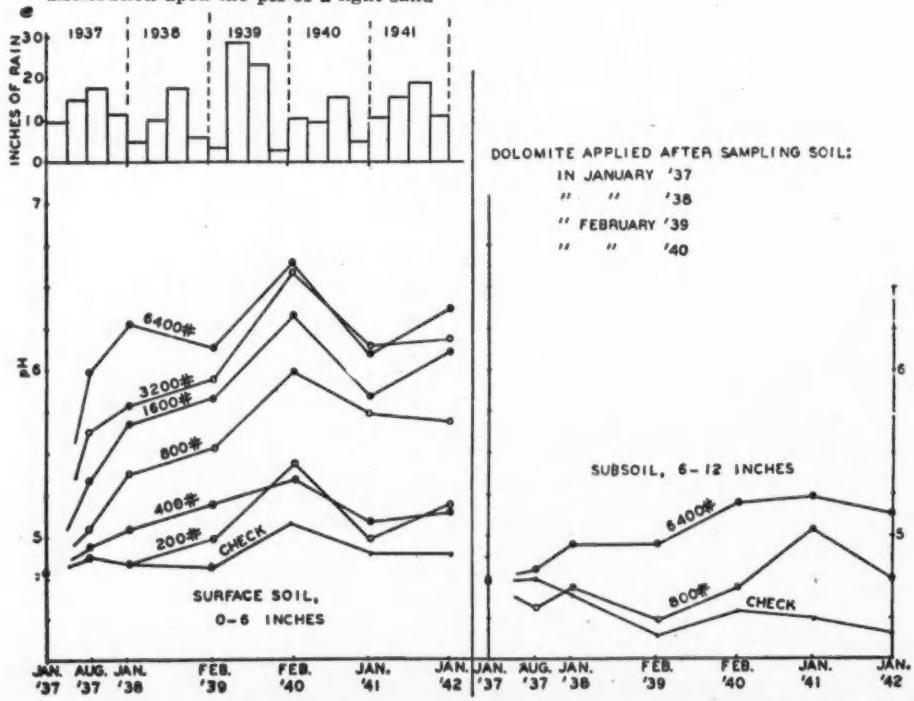


Figure 4. The effect of annual rate of application of dolomite and rainfall distribution upon the pH of a light sand

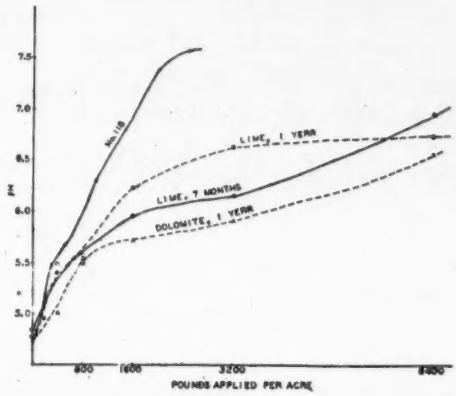


Figure 2. Comparison of the effects obtained in the laboratory and in the field with different rates of application of lime on the pH of a light sand

pounds per acre. All applications were made by hand from trunk to trunk of the buffer rows. Complete samples were made of a large number of borings for both surface (0 to 6 inches) and subsoil (6 to 12 inches) in each of the blocks before the materials were applied. In August, 1937, and again in January, 1938, surface and subsoil composite samples were taken consisting of eight borings from the leafdrip area and two from the middles of each plot. The pH of each of these samples was determined with a glass electrode. In Figure 2 the laboratory effect of lime on the composite sample is compared with the field results seven months and again one year after applications were made. There is fair agreement between the laboratory values and field applications below pH 5.5 but considerably more lime is required in the field to raise the pH fro 5.5 to 6.0 than a laboratory determination would indicate. After the soil samples were taken the applications were repreat-again in 1938. Soil samples were taken again in February of 1939 before the third annual applications were made. The fourth and last applications were made following the sampling of the soil in February, 1940. The soils have been sampled subsequently in January of 1941 and January, 1942. The pH values found at each sampling for the lime, dolmomite and magnesium carbonate plots in the grapefruit block are shown together with rainfall distribution in Figure 3, 4, and 5. Emphasis must be placed on the fact that the changes between the application and sampling dates are not shown. The pH values of many of the plots, especially with the active magnesium carbonate and lime, doubtless reached somewhat higher peaks during this time internal than those found. The values found may actually be taken to represent the low points in the annual fluctuations. That dolomite is slower in its action than lime is shown by the differences shown in the first year. It appears that the reaction of the lime with the soil had passed its most active stage after seven months but the dolomite was effective after this sampling. The residues of dolomite left in the soil in January, 1941, were effective in maintaining or slightly increasing soil pH. On the other hand, the limed plots appear to be more nearly depleted of unreacted residues by one year after the last application. The magnesium carbonate is variable in its effect. Due

(Continued on page 17)

It would seem to us . . .

—That while constant and justly deserved tributes are daily paid to the men of our Armed Forces . . .

—too seldom is due praise and appreciation given those who produce the vital food crop that basically sustains the whole war effort.

THEREFORE . . .

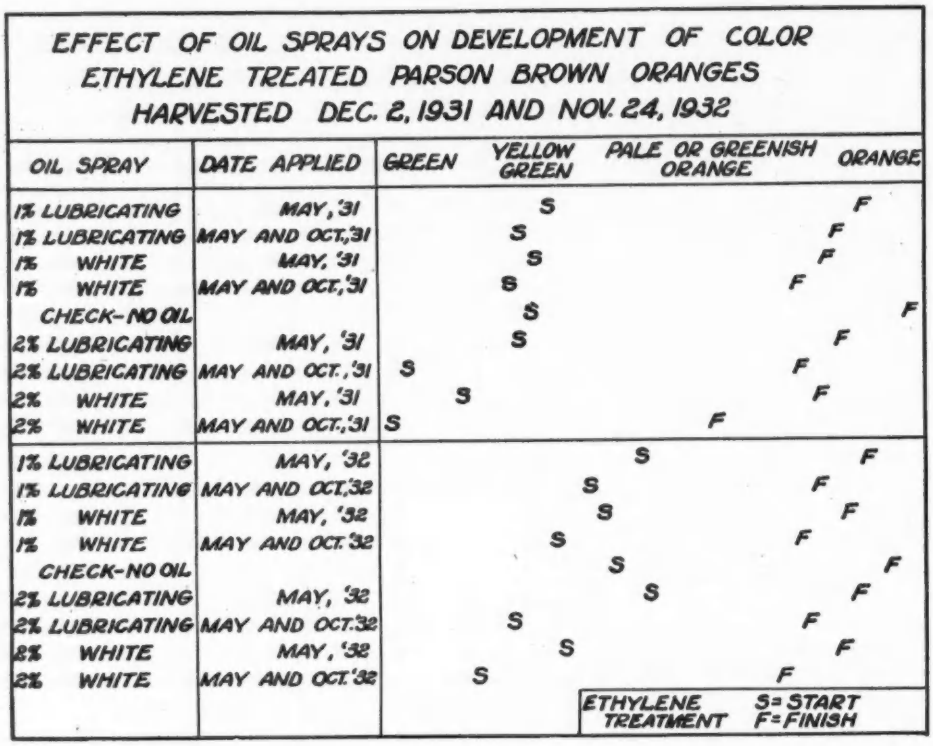
—We pay our sincere tribute to you in Florida and elsewhere on whom the nation depends for its supply of food . . .

—and pledge our full support to you in the unspectacular, but highly important task of attaining the high goals set for production of food to meet not only our own needs, but those of our valiant allies.

NACO BRAND

NACO FERTILIZER COMPANY

FERTILIZERS INSECTICIDES JACKSONVILLE, FLORIDA


EFFECT OF OIL SPRAYS ON DEVELOPMENT OF COLOR
ETHYLENE TREATED PARSON BROWN ORANGES
HARVESTED DEC. 2, 1931 AND NOV. 24, 1932
OIL SPRAY
DATE APPLIED
GREEN
YELLOW GREEN
PALE OR GREENISH ORANGE
ORANGE
1% LUBRICATING MAY, '31
1% LUBRICATING MAY AND OCT., '31
1% WHITE MAY, '31
1% WHITE MAY AND OCT., '31
CHECK-NO OIL
2% LUBRICATING MAY, '31
2% LUBRICATING MAY AND OCT., '31
2% WHITE MAY, '31
2% WHITE MAY AND OCT., '31
1% LUBRICATING MAY, '32
1% LUBRICATING MAY AND OCT., '32
1% WHITE MAY, '32
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CHECK-NO OIL
2% LUBRICATING MAY, '32
2% LUBRICATING MAY AND OCT. '32
2% WHITE MAY, '32
2% WHITE MAY AND OCT. '32
ETHYLENE TREATMENT
S = START
F = FINISH

DEGREENING OF ORANGES AS AFFECTED BY OIL SPRAYS

(Continued from Page 5)

mature friut developed a more desirable color during the gassing period. With fruit of both harvestings the gas brought out a more desirable color in the check lots than in the lots sprayed with oil. Fruit from these plots were stored for thirty days at 70° F. and inspected periodically for decay. Again there was but little difference in the keeping quality of the friut from the two plots.

In 1933 duplicate plots of Parson Brown oranges were sprayed experimentally with lime sulphur solution containing various amounts of other compounds. One-half of each of the plots was sprayed on October 5 with 1 per cent lubricating oil.

Collections were made from the various plots on September 26 before spraying with oil and on October 10 and 24 after spraying with oil. Prior to the application of oil the fruit on all of the plots was breaking color at about the same rate; it also degreened to about the same degree in the ethylene room. In the case of the October collections, the control fruit which did not receive oil spray, broke color somewhat more rapidly than did the oil-sprayed fruit, but the most striking contrast was the difference

(Continued on Page 16)

"Command Performance"

MAKING good the government's request for more food production from every Florida farm and grove won't be easy. But, like a king's request to an artist, it's a "command performance" growers will somehow complete. The GULF organization and GULF BRANDS of Friendly Fertilizers are ready to do their part in making every acre do its best. We're sorry we can't answer all the appeals for our products and service now—but after the war we will welcome the opportunity to demonstrate that GULF BRANDS produce better crops at economical cost.

For Everything that Grows in Florida... use

GULF Brands of FERTILIZER

Friendly Fertilizers Keyed to Your Soil

The Gulf Fertilizer Company
Tampa and Port Everglades, Florida

Prevention Of Stem End Rot

(Continued from last issue)

In several other instances the disinfecting treatments were delayed after removal of the fruit from the coloring room to determine how late they would be effective. An example of this is shown in figure 4. In this instance the results from disinfecting one, two, or three days after removal from ethylene were better than those from disinfecting immediately upon removal. In other tests better results were obtained by disinfecting one day after removal from ethylene than with immediate treatments or treatments two days after removal. All this apparent advantage in delaying the phenate treatment, however, is based on records of decay taken at a given number of days after harvesting. If the charts were changed to show the percentage of stem end rot at a given number of days after the disinfecting treatment, the earlier treatments would appear fully as effective as the later ones, in most cases more effective. From the practical point of view the important thing is the fact that treatments are fairly effective even when there is considerably delay in applying them.

The extent of the control that has been secured with sodium-ortho-phenyl-phenate solutions the past year is shown in figures 5 and 6. The bars in figure 5 show the average results from nine separate experiments, one with Valencias, one with Hamlins, five with Parson Browns, one with Seedlings, and one with Jaffas. All of the lots of figure 5 had received a 42-hour ethylene treatment prior to disinfecting and none of the lots of figure 6 received ethylene but disinfecting was delayed for two days after harvesting.

With the ethylene treated oranges the disinfecting treatment held the decay to one-fifth of that in the controls up to the eleventh day in storage at 70° F. and to one-third that in the controls up to the fourteenth day; after that the effect of the treatment seemed to be largely lost.

With the oranges that had not received ethylene there was 8.0% of stem end rot at the end of 17 days on the fruit that was not disinfected, and none on the fruit that was disinfected. At the end of 21 days there was 15.0% on the untreated fruit and 3.7% on the treated fruit.

With the fruit that had not passed through the ethylene room the disinfecting treatment delayed the development of stem end rot approximately one week; with the fruit that had received ethylene the delay was approximately a half week. These figures are based on a 70° storage temperature. Any lowering of the temperature would increase the spread in time. Under the usual shipping conditions the lower temperatures probably would double these time periods.

The disinfecting treatments seemer to inhibit rather than kill the fungi. After two or three weeks at 70° the organisms again became quite active. This was avoided in the tests by a daily repetition of the disinfecting treatment as shown with lot 6 of figure 4, a thing that, of course, would be entirely impractical commercially.

Various modifications in the application of the sodium-ortho-phenyl-phenate were tested. At 100° F. the material could not be used in greater strength than a 1.2% solution without injury. A 2% solution at 80° F. gave slightly better results than the 1.2% solution at 100°. Increasing the temperature with a particular strength of solution increased injury more rapidly than decay control. The most satisfactory results were obtained at temperatures of 100° or lower. Increasing the period of treatment seemed to be favorable to decay control without greatly increasing injury.

It seemed from these observations that more satisfactory results might be obtained by following sodium-ortho-phenyl-phenate directly

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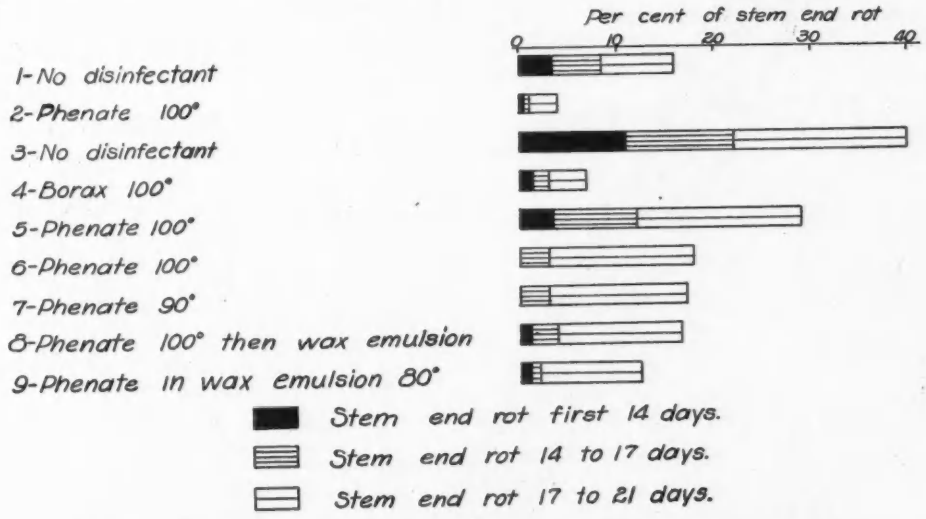
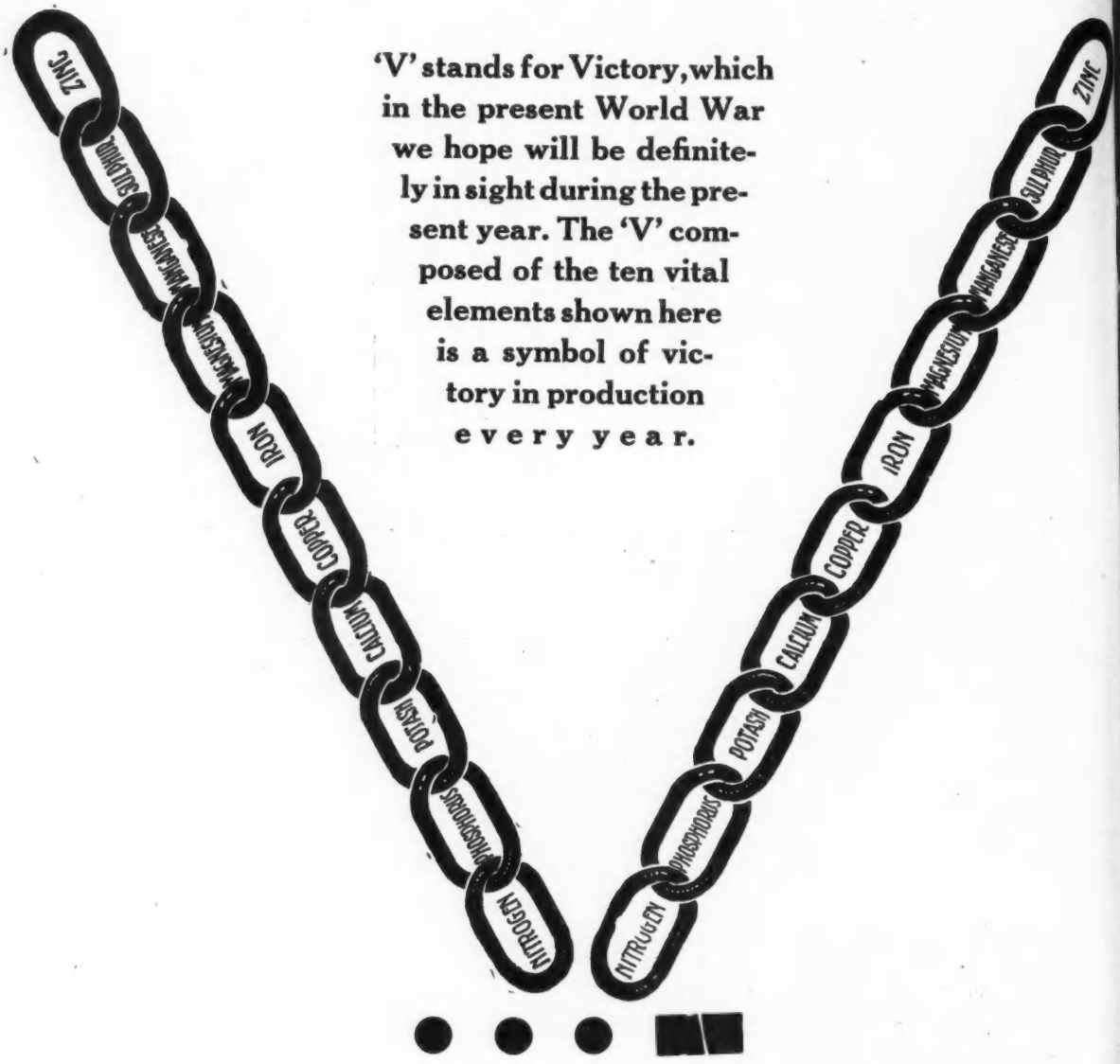


Fig. 7. The effect of various disinfecting treatments on stem end rot of Seedling oranges. All lots were in the ethylene room 42 hours. The borax treatment was before ethylene and all other treatments after ethylene. All treatments were for a two minute period. There were 200 oranges under each condition. The storage temperature was approximately 65° instead of 70°.

Each Passing Month Re-emp as
Importance Of Food P du



'V' stands for Victory, which in the present World War we hope will be definitely in sight during the present year. The 'V' composed of the ten vital elements shown here is a symbol of victory in production every year.

Superior Ferti z

Phone Y-1623

G. D. S , P

Factory and Office East Broadw At

mphasizes The Increasing Production . . .

The emphasis of the production of citrus fruits has been made particularly evident by the recent government orders which have resulted in the requisitioning of so large a percentage of the canned citrus juice output as well as so great a percentage of the fresh fruit output of the present season. For years past the industry has told of the remarkable food value of citrus and has properly played up the value of citrus fruit for its medicinal properties in combatting "flu," and chemical analysis has proven the exceptional vitamin content of citrus — but never before has there been such a widespread public acknowledgement of these properties as has been accorded by the action of our armed forces in demanding that so large a percentage of the total citrus crop of the nation be allotted to the use of our Army and Navy.

EXTRA VALUE BRANDS
Help Produce The Very Finest Crops

Like many other manufacturers we find ourselves in the position of being unable to supply all of the orders which come to us as the result of the shortages of certain materials, but we have thus far been able to care for the demands of our regular customers and hope to continue to be able to render this same service for the duration. And in caring for these requirements we have maintained the high standard of our products throughout this trying period. Not only is our supply of materials taxed to the utmost, but the capacity of our plant has been over-taxed to a point where it has been necessary for us to take over the facilities of another factory to keep up with the orders for **EXTRA VALUE BRANDS** of fertilizer — which we believe furnishes incontestable evidence of the fact that Florida growers are appreciative of the service we are rendering them and of the high quality of our fertilizers.

In addition to our fertilizers Florida growers have come quickly to realize the outstanding merit of Superior's **EXTRA VALUE Insecticides,** and during the past season our sales of these varied commodities has far eclipsed any previous sales record.

The word SUPERIOR has proven to be decidedly more than just a trade name with this company, for we believe that the growers who have put our product to a fair test will agree that no other name than SUPERIOR would have been suitable for our fertilizers and insecticides.

tilizer Company

. Sloan, Pres., P. O. Box 1021

dway At 47th Street, Tampa, Florida

PREVENTION OF STEM END ROT

(Continued from page 9)

with a water wax emulsion or by including the disinfectant in the emulsion. The results of three tests of that kind are shown in figures 7, 8, and 9.

These preliminary experiments seem to indicate that the sodium-ortho-phenyl- phenate treatment might be followed immediately with a water wax emulsion or that the disinfectant might be included in the emulsion with favorable results. The experiments are being repeated and others made in which weak disinfecting solutions are being followed by wax emulsions carrying low percentages of the same disinfectant.

While the experiments with sodium-ortho-phenyl-phenate have not as yet developed a program that can be recommended for general use, it is hoped they will ultimately lead to a method of stem end rot prevention that will fit in with the rapid movement of fruit through the packing house.

Conclusion

Although there is still much to be desired in methods for preventing stem end rot, a great deal can be accomplished with what is already known. One of the most important things is to avoid careless and excessive ethylene treatments. They may give the consumer golden oranges, but if he loses part of them from decay, he may be more inclined to think he has been given golden bricks. Where it is possible to do so, any ethylene treatment should be avoided. If ethylene is really necessary to secure a marketable color, a borax treatment before ethylene will hold the stem end rot in check. Where the borax treatment does not fit into the packing house plans, sodium-ortho-phenyl-phenate might be tried in a limited manner by operators who are in a position to maintain an accurate control of temperature and concentration in order to avoid injury to the peel.

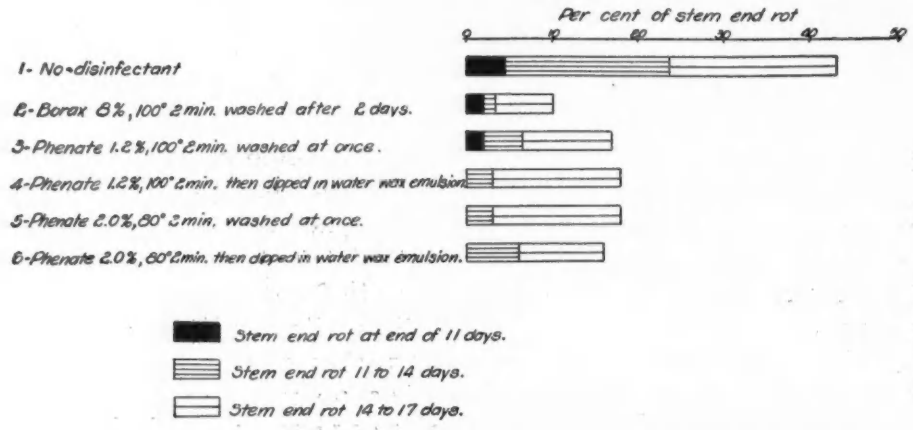

Per cent of stem end rot
0
10
20
30
40
50
1- No-disinfectant
2- Borax 8%, 100° 2 min. washed after 2 days.
3- Phenate 1.2%, 100° 2 min. washed at once.
4- Phenate 1.2%, 100° 2 min. then dipped in water wax emulsion.
5- Phenate 2.0%, 80° 2 min. washed at once.
6- Phenate 2.0%, 80° 2 min. then dipped in water wax emulsion.
Stem end rot at end of 11 days.
Stem end rot 11 to 14 days.
Stem end rot 14 to 17 days.

Fig. 8. The effect of various disinfecting treatments on stem end rot of Seedling oranges. The oranges were not given ethylene treatment. The disinfecting treatments were given two days after picking. There were 200 oranges under each condition. The storage temperature was approximately 65° instead of 70°.

BUY UNITED STATES WAR BONDS AND STAMPS

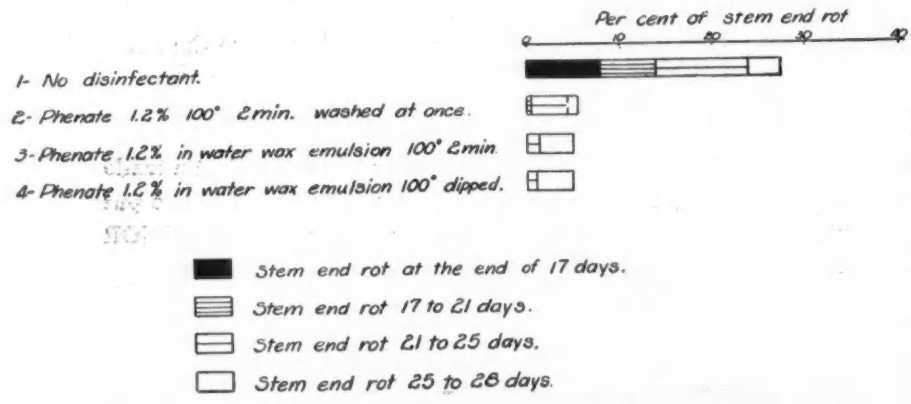

Per cent of stem end rot
0
10
20
30
40
1- No disinfectant.
2- Phenate 1.2% 100° 2 min. washed at once.
3- Phenate 1.2% in water wax emulsion 100° 2 min.
4- Phenate 1.2% in water wax emulsion 100° dipped.
Stem end rot at the end of 17 days.
Stem end rot 17 to 21 days.
Stem end rot 21 to 25 days.
Stem end rot 25 to 28 days.

Fig. 9. The effect of various disinfecting treatments on stem end rot of Valencia oranges; the average of two separate experiments with 200 oranges under each condition in each experiment. Lots 1 and 2 did not receive ethylene; lots 3 to 9 inclusive, were in the ethylene room 42 hours. Lots 4 and 5 were disinfected before ethylene; lots 6 to 9 inclusive, after ethylene. The borax solutions were 8 per cent, the phenate solutions 1.2 per cent. All disinfecting treatments were for 2 minutes. The phenate treatments of lots 2, 5, 6, and 7 were followed by washing. The storage temperature was 70°.

A Well-Deserved Commendation

The Lakeland Ledger pays the following well-deserved endorsement to the work of an able Florida scientist:

"Working with the assiduous thoroughness characteristic of men of science, Dr. A. F. Camp has performed a service to Florida citrus which cannot be valued too highly.

"His labors in the citrus experiment station at Lake Alfred have raised the vitamin C content of oranges 25 per cent and caused trees to bear much more fruit.

"He has done much more for Florida citrus, but these two services are the ones which command most attention just now.

"Studying tree and soil to ascertain how to make the tree produce more and better fruit, Dr. Camp discovered that many trees, especially those here in the ridge section, needed more magnesium, zinc, manganese and copper.

"But it was not a chance recovery. Much painstaking effort was required, and Dr. Camp did not announce results until he was certain he had found the way to more and better fruit.

"As a result of Dr. Camp's work, the physician's recommendation to eat citrus fruits, regularly has become more significant. Consumers of the fruit in which the important vitamin content has been raised are getting more of the health-sustaining force.

"Too, growers whose trees had begun to be less productive gained new impetus, giving the growers more fruit, more dollars.

"Besides reflecting much credit upon Dr. Camp, his work has given new emphasis to the fact that the growing of citrus is a scientific enterprise. Like the man who raises cattle, the citrus grower becomes more im pressed each year with the necessity for proceeding scientifically.

"Individuals without knowledge of citrus who become growers on the strength of reports they hear about growers who reap big profits soon learn that success in citrus depends upon much more than rain, sunshine and casual fertilizing.

"Back of the steady advance of citrus is excellent work by men like Dr. Camp who study beneath the surface for the fundamental factors involved in cause and effect."

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Sarasota County...

Sarasota County is located geographically in the southwest section of the state on the Gulf of Mexico. The County was created by an act of Legislature in 1921 from Manatee County. There is a diversity of agricultural activity in the county and it is also of major importance as a winter resort.

Agricultural Extension work was started in Sarasota County on a permanent basis in 1934. Mr. W. E. Evans has been the County Agent directing all Agricultural activities since that time, and the capable job that he is doing is evident as one rides over the County and takes note of the many developments that have been made in bringing this County to the front from an agricultural point of view.

Sarasota County has an area of 328,960 acres of land with 7000 acres under extensive cultivation. Of the crops planted to this cultivated land, celery with 1400 acres, is the leading cash crop returning to the growers of the County $1,500,000 annually, Most of the celery is produced on the very rich muck land that lies just east of the City of Sarasota.

Sarasota County has 223,513 acres of fenced range pastures. During the past few years many of the pastures have been improved through the use of soil building programs and by planting various grasses, and at the present time there is 5000 acres planted to carpet grass and 2000 acres planted to para grass. Most of the cattlemen are improving their stock herds and in several instances this County can boast of some of the finest registered herds in the state. Just recently a large herd of registered Guxerat Brahman cattle has been introduced to the County.

There are 2700 acres of citrus grove property in the county and from this acreage moves to the northern market some of the very finest quality fruit. There are a number of local roadside markets around Sarasota that handle a large part of the citrus crop.

Commercial fishing is an important industry to Sarasota County, and this section is also well known to the man that fishes for sport.

Sarasota County is the home of one of the largest dolomitic limestone deposits, and material from this mine is shipped to all parts of the state as a source of magnesium and calcium.

For many years Sarasota County has been noted as a winter resort. The climate is near perfect and with points of interest such as the Ringling Art Museum, winter quarters for the Ringling Brothers Circus, winter home of Kentucky Military Institute, and the many other attractions.

In addition to crops that we have already mentioned, there are many others such as strawberries, cabbage, cukes, tomatoes and potatoes.

Reports of Lyons Field Men . . .

WEST CENTRAL FLORIDA
E. A. (Mac) McCartney

We have been having considerable trouble with rust mites throughout the section and growers have been busy with their dusting and spray machines in an effort to keep this pest under control. Recent rains have been extremely beneficial to both vegetable and citrus growers and all crops are looking good. Grapefruit is moving to the canning plants in a large volume. In this respect it now appears that some of the small growers are at a disadvantage in getting their fruit moved as they do not have facilities for getting the fruit from the grove to the canning plant.

POLK & HIGHLANDS COUNTIES
J. M. (Jim) Sample

With the rain that we have had groves have nearly all responded favorably from the damage caused by November drought. In some cases where dry weather caused severe defoliation, the trees have put out growth and this growth is accompanied by bloom. Young trees are putting on vigorous growth in most places. While this sap-rise in the trees is quite early this year and a cold snap would be dangerous, many growers are going ahead with their top-dressing fertilizer application. Scale insects continue to be a serious problem in some groves and oil spraying is being done at this time in case of severe infestations.

HILLSBOROUGH & PINELLAS COUNTIES
C. S. (Charlie) Little

The recent drought in this section did considerable damage and in some cases in addition to the heavy fruit droppage we had some wood to die. However, groves have made a remarkable recovery and they are now in fine shape. We have finished with our fall application and growers are now making plans to go forward with their spring topdressing application. We have been well pleased with the citrus market so far this season and while there is a depressed market at this time, most growers are extremely hopeful that before valencias start moving to market that the prices will be back at desirable levels.

SOUTHWEST FLORIDA
F. W. (Felton) Scott

Vegetable Growers in this section have just completed one of their most successful fall seasons and are now preparing for their spring crops. Indications are that a large acreage of tomatoes and potatoes will be planted along with other crops that are generally grown in the territory. The citrus market is off considerably and growers are hoping for an early recovery. Much grapefruit is being moved to the canners and these prices have been satisfactory. It is hoped that weather conditions will continue favorable for growing crops. Many citrus groves are putting out a new growth and in some cases the bloom is coming along with the growth.

NORTH CENTRAL FLORIDA
V. E. (Val) Bourland

Citrus Growers throughout this section have just about finished with their fall application of fertilizer, and it has been pleasing to note that in most cases the use of secondary fertilizer elements were included along with the fertilizer application. This is certain to result in a better tree condition and of course this means more fruit and better quality. Scale insects are causing trouble here and in many cases it has been necessary to spray in what is generally termed out of season for oil sprays.

ADVERTISEMENT—LYONS FERTILIZER COMPANY

Sarasota County

—o—

MR. W. E. EVANS, County Agent of Sarasota County is doing a splendid job in furthering the agricultural development of this county.

—o—

In the picture at the left Mr. Evans is pictured in one of the prize celery fields of Sarasota County.

—At the right along with a cattleman Mr. Evans is shown with a fine herd of registered Guzerat Brahman cattle.

—o—

—Below is a picture presentation of another fine crop of celery for which Sarasota has become justly famous.

EFFECT OF OIL SPRAYS ON DEVELOPMENT OF COLOR ETHYLENE TREATED VALENCIA ORANGES 1941-42 CROP

DATE APPLIED	GROVE	GREEN	YELLOW GREEN	PALE OR GREENISH ORANGE	ORANGE
NO OIL SPRAY	A		S		F
	B		S		F
	C		S		F
	D		S		F
	E		S		F
JUNE	A		S		F
JUNE	B		S		F
JULY	C		S		F
AUG.	D		S		F
DEC.	E		S		F
JULY	F		S		F
JULY	G		S		F
APR. AND OCT.	A		S	F	
APR. AND OCT.	B		S	F	
JULY AND DEC.	C		S	F	
JUNE AND FEB.	D		S	F	
JUNE AND FEB.	E		S	F	
JULY AND SEPT.	W		S F		
JULY AND OCT.	S		S F		

ETHYLENE TREATMENT S=START F=FINISH

DEGREENING OF ORANGES AS AFFECTED BY OIL SPRAY

(Continued from Page 8)

in color at the end of each gassing period, the oil-sprayed fruit again having the poorer color. As before the oil spray had no consistent effect upon the keeping quality of the fruit.

In addition to the data obtained from the afore mentioned experimental plots, observations have been made during the current season on Valencia orange groves sprayed in commercial operations where the oil used was of practically the same specifications as that of the lubricating oil used in the earlier experimental plots. Several groves were in the same general locality and sprayed with the same materials. Five groves received no oil spray, seven received one application of oil, and seven received two. A good percentage of the fruit in these groves failed to lose its green color during the winter. The samples taken for gassing tests were from partially shaded positions and were fairly green in color. Where no oil spray was used, the shaded fruit degreened with more difficulty than the exposed fruit; and excessive applications of oil aggravated this difficulty with shaded fruit.

Figure 2 shows the color of the fruit at time of harvest and the amount of degreening that took place during a three-day gassing period.

It will be noted that at picking time the check or unsprayed fruit was not quite so green as the sprayed fruit, and that the twice-sprayed fruit was greener than that which received but one application. Special attention is called to groves W and S which failed to lose their green color after an application of lubricating oil followed by a heavy application of white oil. During the gassing period the best color developed on the fruit that had not received oil and the poorest color on the lots sprayed twice with oil. It is also interesting to note the correlation between final color and time interval between sprayings.

This report is in no way an attempt to discredit the use of oil sprays. The use of them is necessary in the control of certain insect pests and the advantages derived from their use far outweigh their disadvantages. However, from the data herein presented it would seem that from the standpoint of rind color it is well to omit oil sprays whenever possible, and that when they are used the application should be made as early in the growing season as is consistent with effective insect control.

SUMMARY

Oil sprays have the effect of impeding the development of color in the rind of oranges not only while the fruit is on the tree but also while it is in the coloring room. Development of rind color is retarded less by the cheaper lubricating oil sprays than by the expensive highly refined white oil sprays; less by spring applications than by fall applications; and less by low concentrations than by higher concentrations of oil in the spray.

Peanut oil is used in making cooking oil, paint, linoleum, lard, cosmetics, newspaper ink, soap, glycerine, and in the manufacture of leather goods, metals and textiles.

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Other concentrate plants at Dunedin and Leesburg are also in operation and afford a local market for thousands of boxes of Florida citrus fruits daily.

PRACTICAL CONSIDERATIONS RELATED TO pH CONTROL IN SANDY SOILS PLANTED CITRUS

(Continued from Page 7)

to its fineness and crystalline nature, it is highly active in neutralizing soil acidity and in increasing the amount of exchangeable magnesium in the soil. But the exchangeable magnesium is readily replaced by hydrogen from acids formed in the soil and subjected to loss by leaching. The two processes are dynamically opposed in effect on soil pH so that the results obtained by the use of this material are erratic.

Great amounts of magnesium carbonate did not accumulate with even the highest applications. The dolomite shows a noticeable tendency to accumulate. The applications made in the dry year of 1938 were not very effective until the comparatively wet year of 1939. Also, the 1940 application had a carry-over effect in 1941. It is especially noticeable that the rate of depletion of bases tends to keep pace with application. Comparatively low annual applications of dolomite should maintain the pH in the range between 5.5 and 6.0. Excessively large amounts are needed to keep the pH above 6.0.

Except with the rather high application of magnesium carbonate, the subsoil was not much affected. It appears that finely divided dolomite or magnesium carbonate washes through the subsoil. In leaching experiments with soil from dolomite plots, appreciable quantities of dolomite have been washed out of the soil in an unreacted state. Comparatively little dolomite in the poorly buffered subsoil would cause the change in pH shown in Figure 4. Ordinary commercial applications would have little effect on the subsoil, and since the feeder roots of trees are largely concentrated in the surface six inches of these lighter soils, frequently sampling below the surface for soil pH should not be necessary.

Even with dolomite, the losses of bases from the soil are considerable. Also the greater the application, the greater the magnitude of the loss. In light of this and the danger of reducing the available nutrients with excessive amounts it seems wiser to make annual applications of moderate amounts rather than attempt to adjust the pH less frequently. With soils similar to the one studied, after a suitable corrective application of about 1500 pounds had been made, about 500 pounds annually should be about right. These annual applications should be gauged by pH determinations just before the applications are made. The pH should not be allowed to drop below 5.3 nor be carried above 6.0. That is, if one were to find a pH of 5.4 just before the time dolomite is to be applied, say January or February, sufficient

The presence of this sign on a grove is evidence of a grove being well cared for . . .

Swift & Company
Fertilizer Works

A Division of Swift & Company
BARTOW, FLORIDA

material should be applied to prevent the pH from dropping below 5.3 in the following year but caution should be taken to avoid going above 6.0. If the pH is found to be 5.6 at this time, the usual amount applied can be cut with safety. If it is down to 5.3 the amount should be increased. Adjusting the pH between 5.5 and 6.0 once each year is a safe practice and shouldn't be very expensive. As we learn more about the relationships between soil conditions and citrus tree responses this may have to be changed or modified slightly.

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1. Peech, M. Fla. Agr. Exp. Sta. Rept 1940, pp. 148-165.

2. Volk, G. M. and Peech, M. Factors affecting the soil sampling procedure, Proc. of Soil Sci. Soc. of Fla. 2:12-20, 1940.

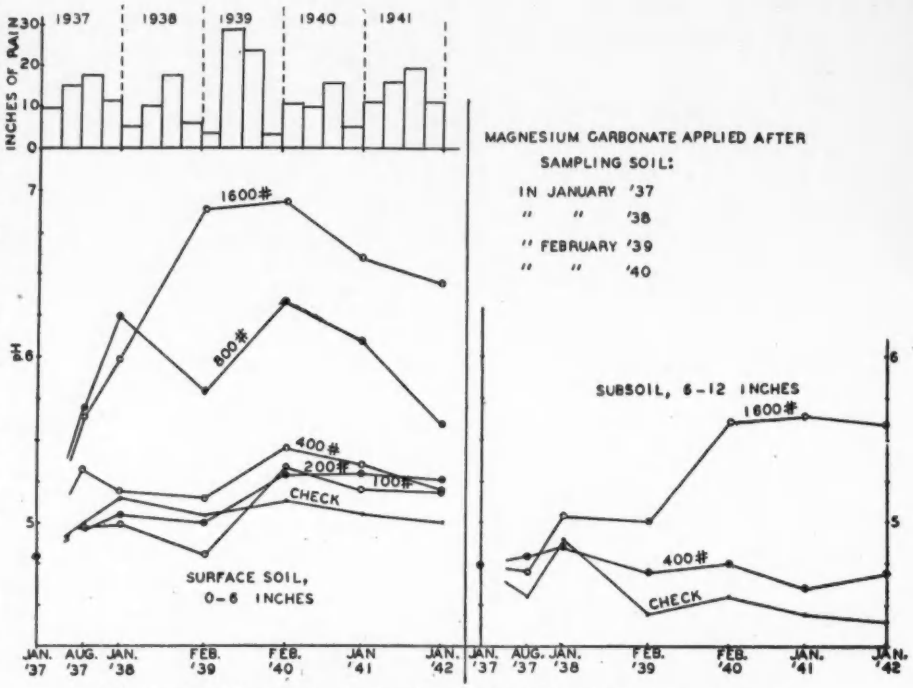

Figure 5. The effect of annual rate of application of magnesium carbonate and rainfall distribution upon the pH of a light sand

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Putnam County home demonstration club women set out 100 new fruit trees during the past month, and are planning to plant more within the next few weeks. Miss Opal Walker, home agent, is assisting the women in arranging for the cooperative purchase of fruit trees.

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